Supporting Collaborative Computing and Interaction

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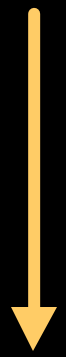
Collaboration Environment

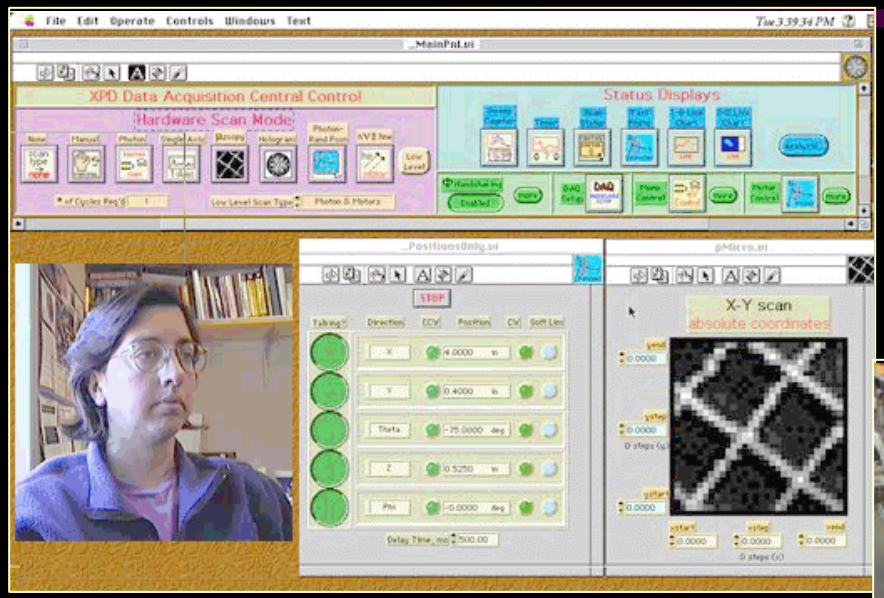
- Collaboration communication options
  - Formal meeting in person
  - Videoconference
  - Teleconference/telephone
  - Informal discussion/meeting
  - File/document sharing
  - E-mail/chat
  - Papers/documents/web

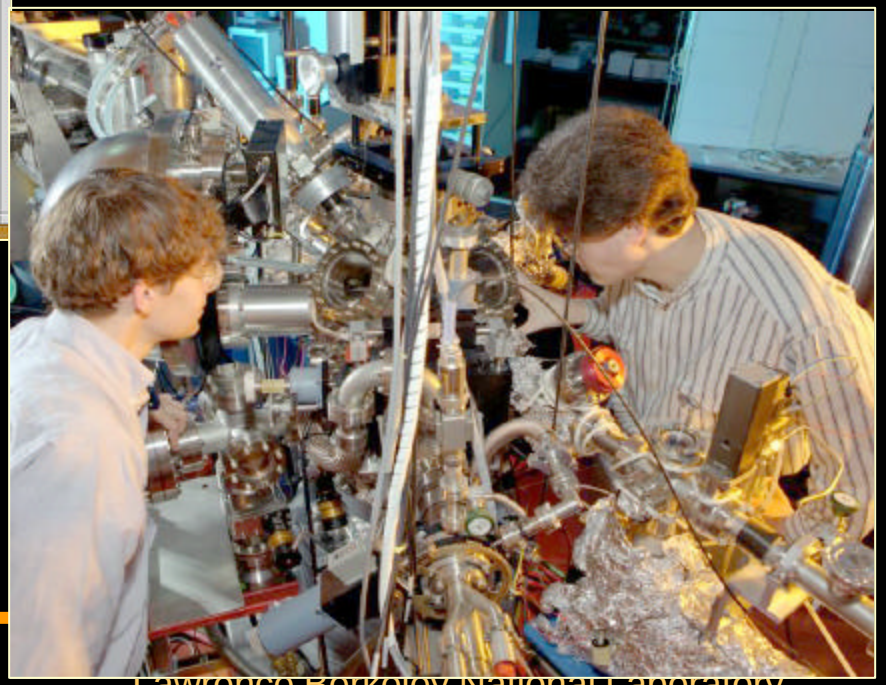


Increasing % of time

Decreasing synchrony

Spectro-Microscopy Collaboratory





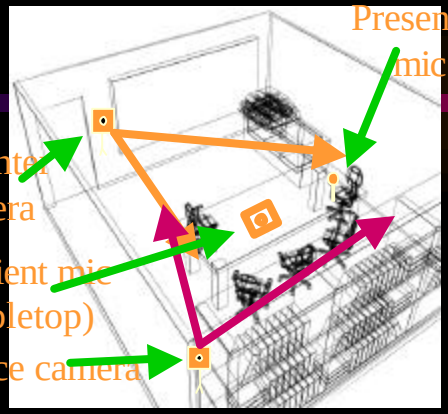
Collaboration Realities

- Collaboration takes effort
  - Must provide a perceptible benefit
  - Must fit with current work practices
- Collaboration tools need to be used regularly (not on the shelf)
- Group must already have a strong need to collaborate

How do we Collaborate?

- Contact capability
  - Presence/availability information
  - Chance encounters
  - Seek out individuals
  - Schedule meetings
- Discussions
- Share work processes and products
- Security
  - Verify identity
  - Limit authorization

Access Grid Nodes (ANL)



Pervasive Collaborative Computing Environment Goals

- Support ‘continuous’ collaboration
  - Ubiquitous – available anywhere
  - Synchronous and asynchronous
  - Persistent
- Low threshold for entry into the environment
- Target daily tasks and base connectivity
- Leverage off of existing components when possible
- Security

PCCE Design

- Web-based interface for ease of use/installation
- Peer-to-peer with servers providing added value
- Standards-based tools when possible
- Leverage off existing software - Grid services
  - Security
  - Directory services

Example: PCCE Messaging Requirements

- Provides a place to find and interact with your collaborators
- Supports asynchronous and synchronous communication
- More immediate than e-mail but less intrusive than the phone (text-based)
- Supports private and group conversations
- Allows collaborator to be in multiple conversations simultaneously

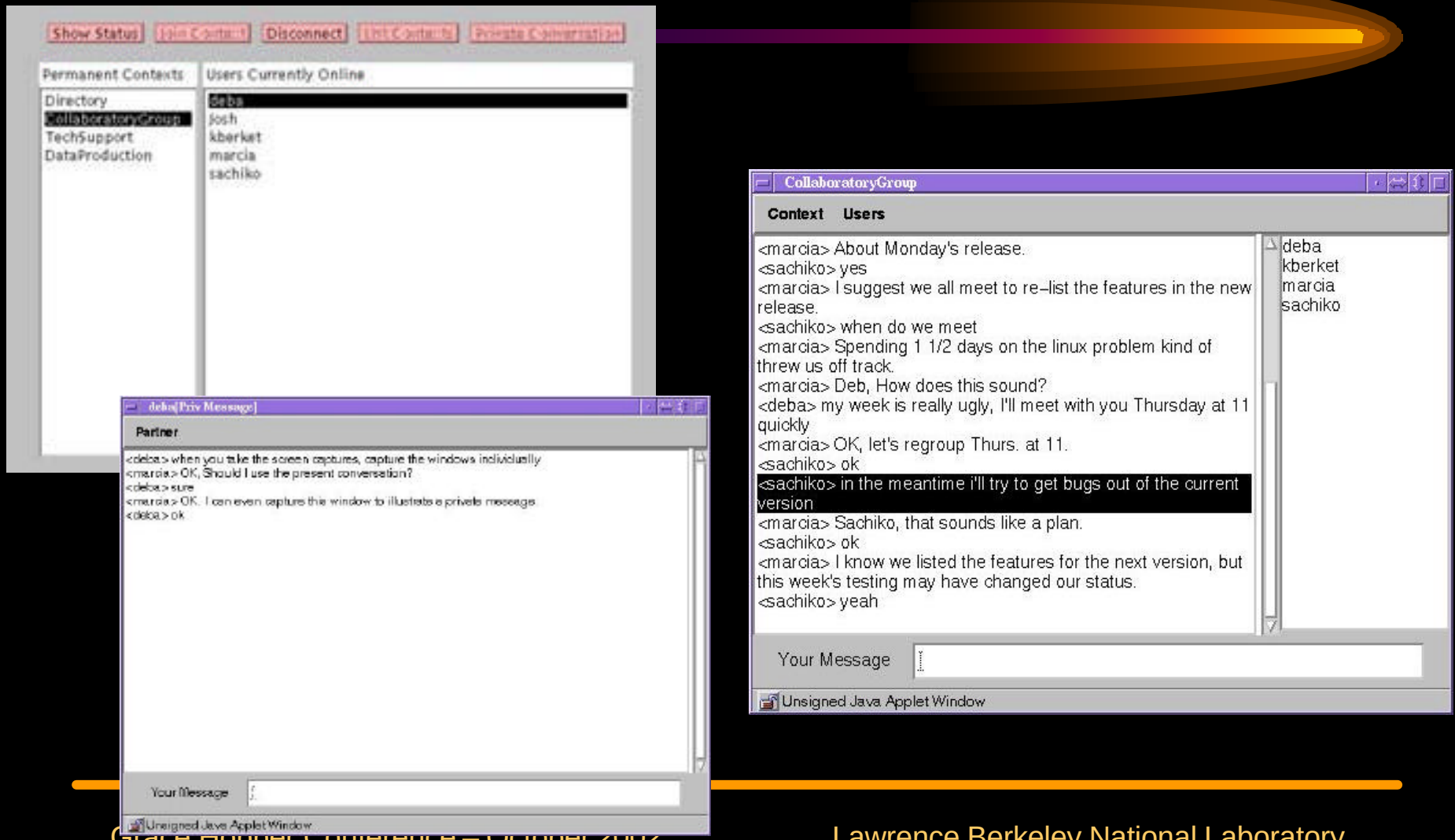
Existing Tools

- MOO
  - Provides persistent virtual spaces
  - Can only be in one place at a time
- Instant Message
  - Support for multiple simultaneous conversations
  - Servers not available for local use
- Internet Relay Chat (IRC)
  - Support for multiple simultaneous conversations
  - Open source clients and servers available

PCCE – Messaging

- Standard IRC server (hybrid.the-project.org)
- Client is a Java applet (originally from nova-irc.sourceforge.net)
- Modified client to add enhancements
  - Permanent contexts (virtual spaces)
  - Storage of preferences and current state
  - Sounds for notification of events

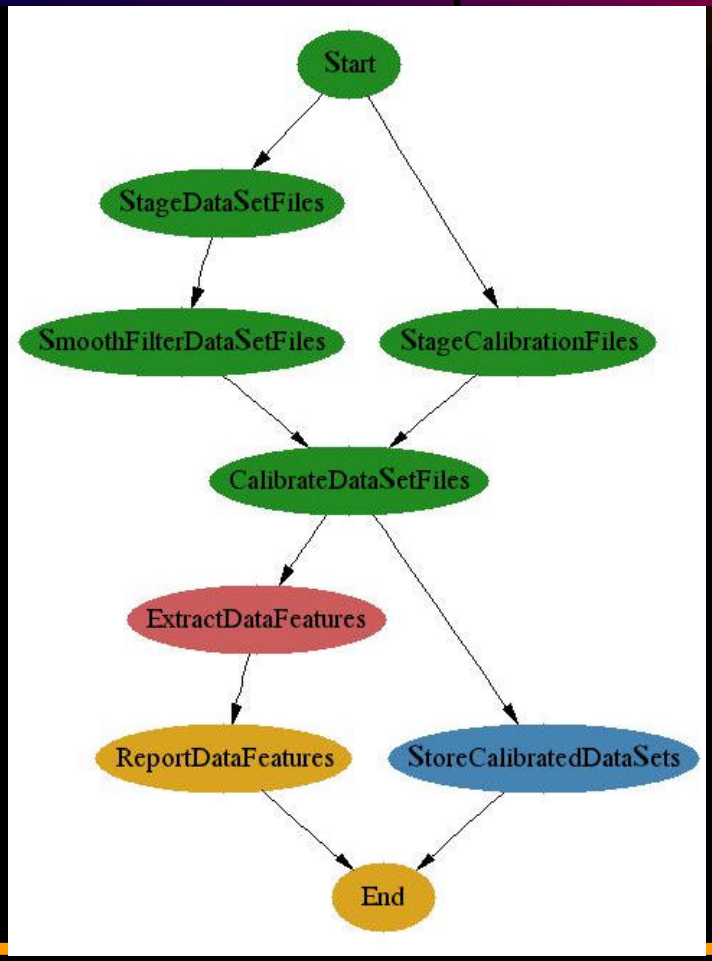
PCCE Messaging Applet



PCCE Workflow

- Describe complex series of computation tasks
- Include human interaction
- Provide job submission/tracking

Workflow (LBNL)



File-Sharing

- Peer-to-peer
  - Using reliable multicast infrastructure
  - Files shared from natural locations
- Secure
- Distributed authorization

Conclusion

- Collaborative interactions need to be supported by a continuum of tools
  - Feeling of basic connection is critical
  - Many interactions do not require face-to-face
  - By supporting the day-to-day interactions we increase the need for and utility of Access Grid environments

URL

- http://www-itg.lbl.gov/Collaboratories